MEF Vic 2015 International Study Tour

USA and Canada

The Municipal Engineering Foundation has been in existence since 1966 and was established for the express purpose of providing opportunities for engineers working in local government in Victoria to enhance their technical and managerial skills. This is achieved by annually allocating scholarship awards to research a wide range of internal and overseas study topics.

The 2015 tour was awarded to three engineers to travel the United States of America and Canada including attending the American Public Works Association Congress in Phoenix, Arizona from 30 August to 2 September 2015. Each scholarship provides $10,000 to cover travel, accommodation and congress registration.

Successful recipients of the 2015 scholarship are –

• Ken Bott, Manager Infrastructure Assets, Bayside City Council
• Simon Kinsey, Design & Construction Coordinator, Whitehorse City Council
• David Moloney, Works Manager, Corangamite Shire Council

Trustee, Mark Varmalis Director Environment & Engineering of Yarra Ranges Council, will also be joining the tour.

Tour Itinerary

• San Francisco - 21 to 26 August
• Phoenix - 26 August to 2 September
• New York - 2 to 6 September
• Chicago - 6 to 9 September
• Seattle - 9 to 12 September
• Vancouver - 12 to 16 September

Planning for the study tour

Planning for the study tour commenced at the beginning of April. The group has met 10 times either face to face or via teleconference to plan all aspects of the tour; initially identifying cities to visit, arranging flights and accommodation, establishing contact with representatives of organisations we will visit, establishing itineraries for each site visit and making arrangements to attend the APWA Congress in Phoenix.
Itinerary on a Map
San Francisco

After an initial 14 hour flight from Melbourne to Los Angeles followed by a further one hour flight, we arrived in San Francisco yesterday morning. To ensure that jet lag didn’t get the better of us, we spent most of the day walking around the city and getting a sense of where the key areas of interest were. This morning we were up early for a trip to Alcatraz, which was quite an experience. From there, we walked along the waterfront viewing Pier 39 and Fisherman’s Wharf before making our way to Lombard Street, which must be one of the steepest roads in San Francisco. It has eight hairpin bends and is at a grade of 27 percent (steeper than 1 in 4) with the adjacent footpath entirely as steps. The hydrangeas looked great bringing brilliant colour to the street which is an incredible tourist attraction. The Council has traffic management staff directing traffic and pedestrians at the top of the road. Not sure how local residents would feel about all of the activity!
San Francisco - Sustainable Transport
Despite quite substantial hills around the city, cycling is very popular and the City of San Francisco has provided well for their tourist market. Both on-road and off-road dedicated paths connect well from the CBD to along the foreshore and into the parks around the Golden Gate Bridge. We thought that we should experience this first hand and hired bikes for a 30km round trip from the city to the far side of the Golden Gate Bridge. Pedestrians are provided with dedicated of the path on the eastern side of the bridge and cyclists have dedicated use of the western path on weekends.
To activate street frontages the city has replaced parking spaces with ‘public parklets’ (or kerbside dining areas).
City of San Francisco

Our morning started with an inspection of the magnificent San Francisco City Hall, which was built in 1915.
Although City Hall is a grand building by world standards, it is affectionately known as the People’s Palace due to being well loved and utilised by the community. Five wedding ceremonies took place under the grand dome during our visit. In addition to the scale of City Hall being impressive, it has been retrofitted with remarkable seismic shock absorbers to the foundations of the building, which can accommodate 3 feet of lateral movement during an earthquake.

We met with a team of 9 representatives of the City of San Francisco Department of Public Works and City Administration and were presented with interesting and pertinent information on:

- The San Francisco Department of Public Work’s integrated and sophisticated asset management systems (asset registers, GIS and Project Management system), level of service for pavement condition and their approach to long term road pavement management. Of particular note was their visibility of utilities works programs to ensure that following street resurfacing or reconstruction works, no utilities upgrades can disruption the road within 5 years - this is known as the Excavation Code. In circumstances where utilities do have to return to undertake works within the 5 year period, they are required to reseal the whole block during reinstatement following their works.
- Roadway structures - over 360 significant structural assets such as bridges, retaining walls, ramps and stairs. This topic included discussion on the condition assessment inspection regimes and risk management approaches to these critical asset types.
- Capital works planning and funding opportunities through General Funds and General Obligation Bonds were discussed in the context of high level local government financing and the interface with the political body. Of particular note was how community needs were understood and collected, funding was allocated and the communication with the community on what was funded, what wasn’t and why. The City of San Francisco have a $32B 10 year capital works program that is funded by public debt through grants from other government agencies, property taxes and the General Obligation Bond system. 610 residents are polled each year to provide feedback on what the community’s needs are and satisfaction levels with the services City of San Francisco provide.
- Community outreach and engagement as part of the scoping of streetscape improvement projects.
Examples were given illustrating how the community were involved in conceptual design of streetscape upgrade and how this was achieved over 3-4 workshop cycles that typically spanned a year before detailed design and construction commenced.

- Sustainability regarding stormwater quality improvement projects, involving bioretention and infiltration, permeable pavements, pavement storage/detention systems. The City of SF are taking climate change and sea level rise very seriously, with a report due to be released next month which informs how the City intends to deal with 3ft of sea level rise by 2050 and 5ft by 2100.
Muir Woods

On our way to visit the City of Napa, which is an hour north of San Francisco, we visited Muir Woods, ancient California redwood forest 30 mins from downtown San Francisco. The tallest redwood in Muir Woods is 258ft!! The Kent family bought the property in 1908 with the purpose of protecting the forest for conservation and donated it to the Federal Government, as the majority of the surrounding redwoods had disappeared due to logging. The park was named after naturalist John Muir, whose environmental campaigns helped to establish the National Park system.
City of Napa

We had lunch with a team of 7 representatives of the City of Napa Department of Public Works and City Administration and had an impromptu discussion comparing notes about Local Government functions, roles and responsibilities, and organisational structures, covering the following:

- the implications of inadequate road maintenance renewal and upgrade funding over many years on levels of service (expressed as PCI)

- the approach Napa have used to address their backlog of roadworks and increase PCI with their ‘10 mile’ rule (funding is allocated for 10 miles of the network to be renewed each year)

- how the drive to improve air quality, limit greenhouse gas emissions and address climate change has resulted in a focus on changes to streets apes that favour pedestrian access and active transport modes over conventional traffic flow enhancements as a by-product

- earthquake damage to public structures and issues around accounting for expenditure to claim state emergency funding.
Introduction of roundabouts to alleviate congestion at intersections of local streets with the freeway (very few roundabouts exist in USA and this project is involving significant community engagement and education to ensure success)

Napa Renewable Resources Project - where compressed natural gas (methane) produced by the anaerobic digestion of food and green waste supplies the fuel needed to run waste collection vehicles!!

We also had a walking tour of downtown Napa to inspect recently completed projects including: First Street Streetscape Upgrade - 3 year community engagement process to concept!
9/11 memorial - consisting of steel girders salvaged from ground zero
Napa River flood mitigation - Q50 flood immunity for downtown area leading to renewed investment
**Phoenix**

After a 2 hour flight from San Francisco we arrived in Phenix to a blistering 105 deg F (41 deg C). Locally they describe the high temperature as a ‘dry heat’ as humidity is low. When you walk outside it very much feels like you have walked into an oven. It may be a dry heat but it is incredibly ‘hot’.

Our hotel is a stones throw to Chase Park, home of the Arizona Diamondbacks. To get a sporting appreciation of Phoenix we caught a ball game on Wednesday night - D-backs lost :-(

The IPWEA Australasian group led by Chris Champion – Director International, IPWEA Australasia and comprising Kimberly Brosztl, Executive Engineer, City of Melville WA, Nathan Koenig, Manager Design & Traffic, Parkes Shire Council NSW, Raad Jarjees, Design Services Manager, Ipswich City Council QLD and Michael de Heus, Principal Civil Engineer / Program Manager Local Government at Tonkin Consulting, Adelaide SA had arrived earlier in the day from Dallas from where they had commenced their study tour. We arranged to meet up the next day for the visit to Mesa.
City of Mesa

We travelled to the City of Mesa on Thursday on the Valley Metro Light Rail, which has just been extended from the western (Phoenix) boundary to downtown Mesa. First impressions of this service were that it was comfortable (a/c - phew!), fast (priority over traffic lights) and highly accessible (DDA and bikes). On reflection, the success of the Metro service as a truly integrated transport solution was due to its design within the streetscape. The stations are quality public spaces with attractive landscaping and sense of place/public artwork - the City of Mesa explained to us how much effort they put into their collaboration with Valley Metro to ensure the stations in Mesa were distinct from other municipalities on the network.

Furthermore, adjacent traffic lanes are narrow/pedestrian-friendly and the priority for bike traffic is obvious.
We were introduced to a team of 11 senior representatives of the City of Mesa covering Transportation, Engineering, Project Management, Community Engagement and City Administration functions and had a valuable two way exchange in the impressive Mesa Traffic Management Center (Centre) on the following topics.

- the improved sense of connection that the new Light Rail system provides to the community

- accelerated works programs where projects interface with other agencies from county/regional/ state jurisdictions through the issuing of bonds to finance the works - the Mesa community then can benefit earlier from services and the interest payments are covered by the City until the time when the agency would have scheduled the works (impressive intergovernmental collaboration!)

- drainage upgrade projects required to address significant under capacity to convey stormwater runoff from the east of Mesa and beyond

- how Mesa has no primary property tax (rates) basis to City revenue and relies on sales tax and utilities fees/charges along with secondary property taxes where bonded projects are concerned to deliver services - this is unusual in the U.S.

Mesa has a 5 year Capital Improvement Program consisting of 288 active projects totalling $341 million that sits within an 8 year long term financial plan. These projects have focussed on the older parts of the City to the west, whereas recent infrastructure has been delivered by recent development growth in the east.

A bond election in 2008 was supported by 68 % of voters (representing 20 % of the population) following a significant program of community outreach and education activities including media releases and public service announcements, door-to-door communication (involving Mesa staff), advertising, social media and public/stakeholder meetings/workshops.

Commitment to Low Impact Development to improve stormwater quality through structural measures and streetscape design elements - akin to our Water Sensitive Urban Design approaches

Asset management and maintenance systems that interface with customer requests (CityLink)

We were given a tour of the city with a particular highlight being one of their regional playgrounds. The playground included a variety of play items that would capture the interest of a broad range of age groups.
Mesa is home to the ‘cactus leagues’ - with the Oakland Athletics and Chicago Cubs adopting Mesa for their pre-season training and warm up program when it is still too cold in northern States (Feb). This provides a major injection to Mesa’s economy. We inspected both the A’s and the Cubs’ facilities, which were impressive to say the least. Although these facilities are primarily used from Feb to April in the pre-season, the facilities are used all year round for rookie and local leagues and other sporting codes and provide substantial economic injection to the local community.
Our day with Mesa finished with an intense late afternoon storm that demonstrated how flat the terrain was and how susceptible some parts of the City were to flooding during heavy rainfall. It also cooled things down for a couple of hours!!
City of Scottsdale

The wonderful folks from the City of Scottsdale treated us to door to door transport from our hotel in downtown Phoenix to the Scottsdale Public Works offices/depot on Friday.

We were introduced to a team of 9 senior Scottsdale representatives covering Capital Works, Fleet, Traffic Management, Pavement Asset Management, Community Engagement and Solid Waste Management functions and had a valuable discussion on the following topics:

‘Scottsdale 101’ - a course available to residents, new Councillors and other key stakeholders to provide insight about local government in Scottsdale’s context. This course provides a pathway for citizens to volunteer for community boards and/or run for Council.

Expenditure in sense of place and public artwork approximates 1% of the total budget for capital improvement projects - this initiative was supported by a majority vote from the Scottsdale community

Residents have voted for increased sales tax for the purpose of improving infrastructure - over 50% community participation in the budget election!!

All staff are encouraged to talk to the media - this has resulted from a cultural change right from the top of the organisation (let the experts talk). Also, Scottsdale’s attitude to the media is to use all media channels to tell their story...rather than waiting for the media to point out issues in a negative light. This has required a paradigm shift from staff feeling that ‘this is just what I do’ to being prone to telling their story about how their role serves the community.

A Bond Task Force (citizens jury format) is used to inform the Council on budget priorities. The 2013 Task Force work shopped 9 times in 5 different locations and was supported by a variety of other public outreach activities including 4 press releases, 10 media articles, 7 tweets/Facebook posts and 11 presentations to community groups. Although this Bond initiative failed at the 2013 election, the City responded through a new initiative - of ‘Communicating the Core’ - a community education campaign to increase awareness about the City’s core services and focussing on communicating services through images rather than text and numbers. Posts on social media has also become a major communication mode. The 2015 bond election will be for a $95M capital improvement program.

A 6% tax to hotel room bills is used to support marketing of Scottsdale and to fund capital works that enhance tourism potential

On-street parking is a challenge due to the City’s commitment to providing free parking, and thereby being a victim of its own success

Scottsdale is the home of the invention of the side loading solid waste collection truck - a necessity to address the difficulties with manual loading due to the hot climate

A citizens survey undertaken every 2 years demonstrates the City of Scottsdale sits in the 90th percentile with regards to community satisfaction with municipal services

Pavement condition index is steadily increasing due to a focus on pavement asset management following the vision/mission of ‘the right treatment to the right road at the right time’. Pavement condition assessments are undertaken every 3 years for arterial roads and every 5 years for local roads. When roads are identified for renewal works, checks are made that DDA elements comply (pram ramps, footpaths etc). The application of an innovative fibre-reinforced sealing treatment that was particularly useful for treating alligator (i.e. Crocodile he he) cracking was also presented.
Fleet maintenance focus on ongoing improvement and performance measurement was showcased through Scottsdale’s monitoring of production against time standards and how significant change management was required to align staff to this customer service approach to daily work.

We inspected the impressive Scottsdale Traffic Management Center and after being treated to a delicious lunch, we inspected a recently completed sustainable Fire Station building project (designed to stringent LEEET standards) and the site future storm water quality improvement project concepts that have been developed within a major floodplain within Scottsdale.
Grand Canyon

In planning the study tour and discussing each city that was on the itinerary, we naturally also talked about opportunities for seeing the area more broadly when we had time to ourselves. The grand canyon was one of those conversations early on, but we had to scratch it from the program when we realised that organised tours would take 13 hours from Phoenix, which could not fit our agenda as we had a 6 pm dinner function on the Saturday with the Chicago Chapter and the APWA congress commenced Sunday.

However, after identifying that driving in the US is not as formidable as expected (it is still very weird when we are use to the right hand drive) we agreed that this was a side trip that could not be missed.

We hired a car, set off at 6 am and headed north. As we travelled it was quite amazing to see the area change from desert and cactus plants to bushes then pine trees.
After a three and a half hour drive we were pretty much there, the destination being the Grand Canyon Village. We happened to pass the Grand Canyon airport and immediately wondered what our chances would
be of getting into a helicopter for a flight over the canyon. Wow, what an incredible experience.
After our 30 minute flight we then made a quick drive out to the canyon’s edge to further experience this amazing location. We haven’t stopped talking about how great this experience was.
The 2015 APWA International Public Works Congress and Exposition kicked off Sunday morning at 7am with the First-Timers meeting. Yep, 7am on a Sunday - what’s that all about? It was a good introduction into what to expect from the event.

We have regularly caught up with the IPWEA Australasian group of Chris, Kimberly, Michael, Nathan and Raad. Ross Goyne, President IPWEA Australasia and also currently President IPWEA Vic and Peter Higgs President IPWEA NZ have also joined us at the congress creating a strong representation from down under. In keeping with tradition, Chris has provided us each with white Greg Norman golfing hats, branded as IPWEA. This provides a great way of identifying each other in the crowd.

The opening session was exceptionally well put together. After the formalities of recognising key delegates, seeing the hand over of presidency of APWA and acknowledging contributors involved in organising the event we were introduced to key note speaker, Marcus Luttrell.

Wow is all I can say. Marcus is an absolutely inspirational person. His story is nothing short of incredible and is told on film and in his book "Lone Survivor and Service: A Navy Seal at War". An amazing person.

We each then separated to attend one of the many (generally up to 10) parallel education sessions that are part of the congress. The content has been considerably wide with topics focussing on leadership, sustainability, asset management, construction, technical engineering, emerging technologies, emergency management, facilities, fleet, innovation, parks, snow management, waste management, transportation, water and young professionals. We have been spoilt for choice.

The morning general sessions have been exceptional with speakers including Marcus Lutterel on the Sunday, technology experts discussing intelligent transport solutions, drones and other leading innovations Monday, and Diana Nyad, Tuesday who is a long distance swimmer, sports journalist and broadcaster. Diana, at the age of 64, successfully swam the 110 mile swim from Cuba to Florida after four earlier failed attempts. An inspirational speaker who achieved a life long dream and challenge.

The experience of the APWA congress is unmatched. Their ability to inspire and entertain is quite amazing. The venue was expanded in 2008 to provide more than 83,600 square metres of meeting and event space and is more than 185,800 square metres in total, making it one of the top 20 convention venues in the United States. The exhibition hall is huge and has 357 exhibitors. There are thousands of delegates who are extremely well looked after by the core organising group and their volunteer support base. The overall event has been extremely impressive.
It was a great surprise to see Kim Sedgwick, former IPWEA Vic board member and former chair of Young IPWEA Australasia at the congress exhibition in her new role of Chief Operating Officer ARRB, Exton, Pennsylvania, USA at the ARRB stand. Well done Kim.
New York

Next stop on our study tour is New York.

After a flight of 5 hours we arrived at Newark Airport Wednesday. We then caught a train with one transfer to the financial district of Manhattan to our hotel. The New York subway system provides connections all across the city and is really easy to use. It is amazing that this system was created back in 1904.

As we had meetings planned for the next day with the Department of Transportation we had a quick evening meal and called it a night.

We had an opportunity the next morning for a quick walk to view some of the city skyline. The new Freedom Tower (One World Trade Centre) and 9/11 memorial was stunning and incredibly moving. It was also wonderful to see some of the city’s iconic buildings and places.

Our plans for New York are to meet with the Department of Transportation, then to take a ferry across to Staten Island to meet with the Commissioner of Staten Island and some of his team Thursday. Friday we are meeting with New Jersey Department of Transportation and Rutgers College. We then have Saturday and Sunday morning free to visit the New York sights.

Highlights of our sightseeing were a visit to the top of the Empire State Building at night, Grand Central railway station, the Highline - a former aerial railway line converted to a linear community park, baseball game at Yankee Stadium (Yankees lost to Tampa Bay 2 – 3), cycling and walking through Central Park, and generally walking around the city.
New York Department of Transport and Staten Island

Thursday we visited the New York Department of Transportation. We were staying in the Financial District so it was an easy stroll from our hotel via Trinity Church (as seen in the movie National Treasure) and along Wall Street with high security evident around the New York Stock Exchange.
The security was also a priority through the doors of the Department of Transportation where we had to produce photo identification and screening similar to passing through the airport. After we all got our clearances we were warmly greeted by Michael Replogle who is the Deputy Commissioner for Policy and we were treated to some very interesting presentations.

The first presentation was from the road maintenance team. We were amazed to learn that they are responsible for over 20,000 miles (32,000 kms) of roads throughout the five boroughs that make up New York City. A big issue for road maintenance is the extreme weather conditions and in particular the harsh winters. Temperatures vary during the year from mid 30's like we were experiencing to -12 degrees or less. Pavement damage in winter is a major concern and they patch over 470,000 potholes per year. The water gets into the pavement and freezes causing the asphalt to pop out. They explained their various methods of pavement management and treatments.

The next presentation was about sidewalk management. We are getting used to the local lingo of sidewalks and not footpaths, park strips and not nature strips. An interesting note is that in the case of properties with four or more owners (e.g. apartment buildings) as well as commercial properties, the property owners are responsible for the condition of the sidewalk in front of their property and not the City. All sidewalk maintenance is complaint based. If there is a complaint then the City will inspect the sidewalk and if the condition is not suitable then the City will issue a violation notice to the property owners to repair the footpath within 45 days. They may elect to pay the City to undertake the work or engage a private contractor.

After the presentations we were taken to the dock for the Staten Island ferry. This is a free ferry service run by the Department of Transportation. The service runs every half hour during the peak times and can carry up to 5,000 passengers per trip. With our contacts at the Department we had the fortune to meet the Captain of Ferry Captains who kindly took us up the wheelhouse for the trip. This was a real treat as we got to meet the crew. They even diverted the ferry a bit closer to the Statue of Liberty for our benefit.
The fantastic New York City hospitality continued on Staten Island where we were met by the Staten Island Borough Commissioner, Thomas Cocola. Thomas and his staff showed us around the island with a focus on all the great work they have done in response to the effects of Hurricane Sandy that devastated the area in 2012. Houses were completely removed from their foundations and roads and other infrastructure were totally washed away. We had a great discussion about all aspects of municipal engineering. They also showed us the famous Verrazano Narrows Bridge. At the time of its completion in 1964 it was the longest suspension bridge in the world, with a span of 1,298 metres, surpassing Golden Gate Bridge by 20 metres. It still stands as the 11th largest span in the world and remains the largest in the Americas.
City of New Jersey Department of Transportation and Rutgers University

Friday we boarded a series of trains to travel across the water to New Jersey. This visit included chance to visit Rutgers State Universities Centre for Advanced Infrastructure and Transport (CAIT). Patrick Szary, Associate Director, Brian Tobin and Nick Viillo, Presented on Rutgers CAIT And some research which they are working towards for transportation solutions. One such development is the bridge evaluation accelerated structural assessment "Beast". This the worlds first facility that can quantitatively measure the effects of environmental and traffic loading on full scale, real world bridge system.

Rutgers also showed us the Rabit device. This device is used on bridge decks to identify areas of voids and delamination of the concrete deck.

We discussed their connections with other universities around the states and how they were working together by bringing their own areas of expertise rather than duplicating

Also in attendance was from Robert Blight from New Jersey Department of Transportation. Robert spoke about the NJ DOT pavement preservation program. He spoke about treatments that they are using such as slurry seals and rubberised asphalt. Robert brought up their North East Pavement preservation program. It is a group is made up of several counties and the NJ DOT as part of the Federal government’s funding of pavements which requires a regional plan.
Chicago

We arrived in Chicago at O’Hare airport late Sunday and took the Blue line train into the city to get to our hotel, the Hilton on Michigan Avenue, directly opposite Lake Michigan. You could be easily fooled into thinking that you were looking at the ocean. Lake Michigan is huge!

The Hilton has quite a history. It has hosted past US presidents, celebrities and was used by the US Army during World War II.

We dropped off our bags and met up with John Mick from the Chicago Chapter of the American Public Works Association and headed out for drinks and a bite to eat. John was with us throughout the whole time of our visit. His generosity and friendliness cannot be understated – he was the consummate host. We also had amazing friendship and hospitality from Vydas, Michael, Steve, Joy and Larry Lux – thanks everyone, you were fantastic.

Our agenda for Chicago started with settling in Sunday night with drinks at Trump Tower. Monday was a public holiday and so John, Michael and Steve took the opportunity to show us the city and north west suburbs on a cycling tour utilising the cities Divvy bike hire system. We covered about 20 kms over two and a half hours including a visit to the 606, which similar to the New York Highline is also a former aerial railway line however the Chicago version is a connector for pedestrians, joggers and cyclists. We then had lunch at a classic Chicago pizza restaurant, Giordanos, then left for a river cruise where we had a running commentary of the city’s architecture, back to Trump Tower for drinks with the APWA Chicago team and then dinner. Michael then drove us out to see the home of the Chicago Cubs – Wrigley Field.

We were truly spoilt with generosity by John and the team.
Chicago visits

The variety and amazing experiences that we have encountered on our tour continued Tuesday with more of a focus on strategic and high level planning.

The day commenced with a presentation by the Metropolitan Water Reclamation District of Greater Chicago. The organisation manages the stormwater and sewer for the city. Chicago is like San Francisco and a few older cities in the USA that have a combined sewer and stormwater system. This presents some unique challenges especially during high rainfall when the sewer system gets overloaded.

Apologies to the non-engineering types following this blog for the discussion about the unfavourable topic of sewerage but the history of Chicago is a great example of how public works engineering can make a huge difference to the community. For those of you who may not know the layout of Chicago, it is located on Lake Michigan and Chicago River flows through the city. Lake Michigan is part of the Great Lakes that contain around 20% of the earth’s fresh water and 90% of the fresh water in the USA. It’s a huge lake.

In the 1800s as the city developed, all the waste flowed into the Chicago River and then into the lake. The city also took its drinking water from the lake. It’s no surprise knowing what we know now, but people started getting sick from water borne diseases. One option would have been to clean up the river but the option taken instead was to reverse the flow of the river. Instead of flowing into the lake, the river was reversed to flow the other way, into the Mississippi River. Bad luck about the residents along the Mississippi, but at least the city of Chicago had clean drinking water. This happened in 1900 and remains the case today. Of course, Chicago now has modern sewerage treatment plants with one of them being the largest in the world.
We then visited the Chicago Department of Transportation (CDOT). Chicago is the transportation hub of the USA. Rail roads and major highways from the east coast to the west coast pass through Chicago. In previous times there was also shipping from Gulf of Mexico through the Mississippi River to the Great Lakes and beyond. It’s no wonder that transport planning is a major focus of the city.

We had the pleasure of a presentation by Janet Attarian who is the Liveable Street Director. They have done some fantastic work on streetscape and urban improvements with a focus on improving liveability with great facilities for pedestrians and cyclists. The day before we had the pleasure through our hosts from the Chicago Chapter of the APWA to ride bikes from the city’s bike share program and experience some of the 250 miles of bike paths throughout the city. They also explained details of sustainable initiatives they have implemented including a huge amount of green infrastructure including extensive permeable pavements.

The next stop continued on the theme of strategic planning and was a session with the Executive Director of the Chicago Metropolitan Agency for Planning and the Executive Director of the Chicago Mayor’s Caucus. Also attending was a Mayor from one of the 273 municipalities that make up the greater Chicago area. It was a great discussion about the benefits of regional partnerships and planning on a broad scale.
We then continued our planning discussions at the Metropolitan Planning Council. This is a private not for profit organisation that aims to address planning and development challenges to make Chicago a better place to live and work.

We were only in Chicago two days but they have been packed days. Just like New York was dominated by Seinfeld references, the discussion in Chicago was all been about references to the Blues Brothers. "It’s 106 miles to Chicago, we’ve got a full tank of gas, half a pack of cigarettes, its dark and we’re wearing sunglasses. Jack Blues: Hit it!"
Seattle

After leaving our hotel very early in the morning for our flight from Chicago, we arrived in Seattle to a sunny 24° Celsius. We travelled by train from the airport to Seattle CBD and then caught a bus to the hotel.

It is a 2 hour time difference between Chicago and Seattle, so we kept ourselves active to adjust to the new time zone by walking around the area and visiting the Seattle Space Needle. The Space Needle was built in 1962 for the World Fair along with the Monorail which links the Needle to Seattle downtown. From the top of the Needle you get incredible views of Seattle and its surrounding waterways. The greenery everywhere, despite near drought conditions is amazing.

Our agenda for Thursday is to meet with Seattle Department of Transportation and Seattle Public Utilities and then Friday we are catching up with Green Roads and Seattle APWA.

We have spent time enjoying the city with visits to the waterfront area, a tour of the Seattle Underground – which has a fascinating history linking back to the Great Seattle Fire of 1889 after which the city waterfront was raised 22 feet, a visit to the original Starbucks and generally touring the city.

Terrain wise, the city is very similar to San Francisco with some very steep streets. We have been walking quite a lot, averaging in the range of 8 to 10kms per day for the period of our tour. It has been a great way to keep fit.
Seattle Department of Transportation and Seattle Department of Public Utilities

We are joining the dots on our trip. Today we visited SDOT, after previously visiting SFDOT, NYDOT, NJDOT and CDOT. All Departments of Transportation of course. We had the fortune of a number of fascinating presentations by various teams in SDOT.

A common theme for all the cities we have visited is the challenge of funding infrastructure projects. There is a mechanism in USA that municipalities can propose a levy or a bond and take it to the residents to vote on. This is a big topic in SDOT at the moment. They previously had a 9 year levy for a total of $365 million which is about to expire. They are currently proposing a new 9 year levy for a total of $930 million. This would cost the average home owner about $275 per year. The levy requires a simple majority support and goes to a vote in November 2016.

We had a great discussion about the community engagement involved in developing the proposed levy and how the priorities for the levy were determined. We also had a presentation about asset management in the department and the challenges of managing infrastructure assets valued around $20 billion.

Strategic transport planning is a high priority of SDOT. Seattle is currently the second fastest growing city in USA and this is likely to continue. For example, Amazon is expanding its central headquarters and predicted to generate around 100,000 new jobs in the next few years. So like many cities, they are seeking sustainable transport solutions. Priority is being given to public transport, walking and cycling. They showed us around some of the great bicycle projects they have recently introduced throughout the city.
The afternoon was then spent with the Seattle Department of Public Utilities (SPU). Bob Spencer and Tracy Tackett took us on a trip to inspect some of their Green Stormwater Infrastructure. SPU is a leader in this field in USA and continues to innovate with new ideas to improve the health of our waterways.
We can rarely say this, so should take the opportunity, we took the monorail home at the end of the day.
Greenroads, HDR and Seattle APWA

If green buildings why not green roads? This was the question posed to us from our host for the day Jeralee Anderson from www.greenroads.org.

Jeralee is an inspirational engineer who runs a not for profit organisation challenging project teams to go above and beyond minimum environmental, social and economic practices by providing an independent, third party review. The organisation provides a rating system to measure and manage sustainability on transportation projects, similar to a green star rating system for buildings or for appliances. The organisation has projects in 6 countries around the world, including New Zealand, but not Australia, not yet anyway.

Jeralee took us on a tour of some completed Greenroads projects around Seattle. Key features of the projects we saw included the use of recycled materials, systems for the filtration of stormwater and connection to sustainable transport alternatives including public transport and providing improved facilities for pedestrians and cyclists.
The tour was a great chance to see some of the outer areas of Seattle. The city was once dominated by the offices of Boeing. They still have some presence, but the big players in town are now the high tech companies. We passed the area where Bill Gates lives and saw some of the whole communities provided for the Microsoft empire. They are such a huge company that they run their own commuter system of buses. Then there is their neighbours, Amazon who have also taken over a few suburbs.
Our tour then took us to the offices of HDR which is an engineering consulting company where Jill Marilley works, who is on the board of the American Public Works Association. She hosted us for a presentation by the City of Pasco on their process water reuse facility. The City has a number of large scale food producers which generate a lot of waste water. The facility treats the waste water and uses it for irrigation of farmland.

We were then introduced to big Bertha. Bertha is the world’s largest-diameter tunnelling machine.

In 2001 there was an earthquake in Seattle that damaged the viaduct (elevated roadway). It was repaired and is still being used but needs to be replaced. The viaduct runs along the waterfront of Seattle and acts as a barrier between the city and the developing waterfront area. The decision was made to remove the viaduct to open access to the waterfront and replace the roadway with a tunnel. This is the job for big Bertha.

The project is a 20 metre diameter tunnel for 3.2 kilometres. The tunnelling was going well and around 300 metres of the tunnel was completed when trouble struck. There was a problem with the bearings of the cutter and it ceased up. This is not a machine that you can just pull out and take to the nearest garage for repair. The machine cannot go backwards. It is a massive machine weighing over 70 tonnes and it was stuck about 40 metres underground. Fortunately it was located under a place where they could dig down and access the cutters. They had to dig a big hole and get a 300 tonne crane to erect a 600 tonne crane to erect a 2,000 tonne crane so that they could access the cutters. It is now 18 months later and they have now repaired the cutters and plan to resume tunnelling in November.

We were fortunate to have a tour of the site and saw the cutters of big Bertha.

That concludes our tour of USA. Tomorrow we will be travelling to Vancouver to get a Canadian perspective.
Vancouver, Canada

In planning our tour, when it came to the final leg of the journey we recognised that a 4 hour train ride from Seattle to Vancouver would not only be an interesting variation to the flights between cities but also more likely easier time wise.

Another early rise to catch the 7.45am train from downtown Seattle.

The train trip exceeded expectations with its amazing views of Puget Sound and Possession Sound as we travelled along the coastline to Vancouver.
On arriving in Vancouver we decided that similar to San Francisco, New York and Chicago, that a great way to see the city was by bike. We hired bikes and took off for a two and a half hour ride around the city and Stanley Park. The dedicated bike paths provided sights along the foreshore were well worth seeing.
Sunday we had a guided tour organised to visit the Capilano Fish Hatchery, Capilano Suspension Bridge Park and Grouse Mountain. The salmon at the hatchery were quite incredible - it would be great to catch one of them from the local rivers.
We then travelled to the Capilano Suspension Bridge Park to see the bridge and experience the tree top walk through the old growth Douglas Fir trees - the incredible views were quite amazing.
From there we went to Grouse Mountain where we took a cable car from the car park to the near top of the mountain. They had a lumberjack show, birds in motion experience and a further chair lift to where the views of Vancouver and beyond were spectacular. We could have spent far longer at each location and thoroughly enjoyed our day.
Our plans for this week are to meet with the City of Vancouver Monday and the City of Burnaby Tuesday.
City of Vancouver

Today we visited the city whose goal is to become the greenest city in the world, Vancouver.

How about the following for just a few of the inspirational goals taken from the Vancouver Greenest City 2020 Action Plan:

- Reduce community-based greenhouse gas emissions by 33% from 2007 levels.
- Reduce solid waste going to the landfill or incinerator by 50% from 2008 levels.
- Reduce Vancouver’s ecological footprint by 33% from 2006 levels.
- Reduce per capita water consumption by 33% from 2006 levels.

A further key document to support the leadership that Vancouver is showing their community and the rest of the world is the City of Vancouver Transportation 2040 Plan.

We had the fortune of meeting the Directors of the Engineering Services Department which is a large department of around 1,800 employees. We were kindly hosted by the Acting City Engineer, Jerry Dobrovolny. The main difference between the functions of the Vancouver engineering department and those of Victorian Councils is Vancouver also manages the water distribution and collection of sewage.

The day started with us joining in on the Director’s Meeting and then each of us meeting with individual directors to discuss topics in further detail. We had a great discussion and sharing of ideas on topics including asset management, funding for infrastructure projects, climate change, community engagement and strategic planning.
In the afternoon we drove out to Kent Yard which is the City owned and managed asphalt and concrete facility. They supply the City with around 100,000 tonnes of asphalt per year and recycle around 200,000 tonnes of concrete. They are undertaking some great work in recycling and finding alternative uses for products that would otherwise end up in landfill.
To finish the day we were treated to a bike tour of some of the City’s great cycling infrastructure. Vancouver has some of the best facilities for bicycles that we have seen. The key features include:

- Separating bicycles from moving vehicles.
- Separating bicycles and pedestrians along busy paths.
- Providing alternative paths for commuter cyclists away from recreational cyclists.
- Providing bicycle paths that can be accessed by all riders of all abilities.

It was an inspirational day at the City of Vancouver which has given us plenty of ideas for consideration.
City of Burnaby

The last stop on our tour was to the City of Burnaby. It’s the third largest city in British Columbia, surpassed only by the nearby Surrey and Vancouver. It’s home to a couple of famous Michaels, Buble and J. Fox. We didn’t get a chance to catch up with them but did catch up with another talent, a talented engineer, Jonathan Helmus, Assistant Director Engineering Infrastructure and Development.

Jonathan took us through the operations of the city engineering department. Burnaby is a city of around 235,000 residents and is a unique local government agency in that it has large funding reserves, in excess of $900 million. They have impressive asset management systems and this combined with the available funding, they are able to maintain a high level of service for their public infrastructure.
"From Pipe Dreams to Healthy Streams", this is their catch phrase for the city’s integrated stormwater management plans. In the afternoon, Jonathan kindly took us on a tour to show examples of stormwater treatment projects.
At the end of the day we returned back to Vancouver aboard a train with no driver. It’s the Vancouver SkyTrain which is the longest automated transit system in North America (around 62 kms).
Thank you MEF Vic

This amazing study tour has now come to an end. What an unbelievable journey we have had. We hope the blog has been of interest and all of us look forward to sharing all the information we have gathered with our colleagues very soon.

We would sincerely like to thank the Municipal Engineering Foundation Victoria for the fantastic opportunity that was afforded to us and also like to thank and acknowledge the great support of our Councils, Yarra Ranges, Whitehorse, Bayside and Corangamite.

Signing off for now - Mark, Simon, Ken and David.